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U.S. DEPARTMENT OF AGRICULTURE - FOREST SERVICE
CALIFORNIA FOREST AND RANGE EXPERIMENT STATION
Division of Forest Insect Research

WESTERN PINE BEETLE
JAWBONE CREEK, STANISLAUS NATIONAL FOREST
APPRAISAL SURVEY
August 1957

Introduction

An appraisal survey was conducted of western pine beetle loss in ponderosa pine on the Stanislaus National Forest during the week of August 14-17, 1957. The survey crew, under the direction of G.C. Trostle and B.E. Wickman, was composed of C.J. DeMars, J.R. Batchelder, and P.H. Lord, all of the California Forest and Range Experiment Station.

The infestation is in the Groveland District, just north of Jawbone Guard Station. It was first detected by Trostle during the spring 1957 aerial survey. Aerial observation placed medium-sized groups of fading ponderosa pine over an area of 7,000 acres in the Jawbone Creek drainage, just north of the guard station (see map). An appraisal survey, as a basis for determining the need for control, was requested by the Stanislaus Forest.

On August 13, G.C. Trostle and the crew established the cruise lines and quickly reconnoitered the area by auto. On August 14, B.E. Wickman started the crew on the survey.

Insect and Host Species

The western pine beetle, Dendroctonus brevicomis Lec., is killing ponderosa pine. The infested area is a mixed conifer stand composed mostly of mature ponderosa pine with a scattering of sugar pine, white fir, incense-cedar, and black oak. The primary species considered in this survey was ponderosa pine. Much of the northern end of the infestation has been heavily logged during the past 10-20 years.

Current Status

The infestation was sampled with a series of $\frac{1}{2}$-acre circular plots. The plots were 5 chains center to center on a predetermined line. Lines were 20 chains apart, parallel, and running north and south. On all of the plots the following information was recorded. (1) Number of ponderosa pine currently infested with western pine beetle and diameter of each. (2) Number of recently

abandoned ponderosa pine and diameter of each. (3) Number of ponderosa pine dead for 2-5 years and diameter of each. The lower diameter limit sampled was 6 inches. Trees were measured to the nearest 2-inch diameter class with biltmore sticks.

A total of 569 plots, comprising 284.5 acres, or 4% of the stand, was sampled in this manner. The following table shows the estimated total amount of mortality caused by the western pine beetle.

Estimated total loss from Western Pine Beetle

Year of kill	Average no. trees/acre and standard error	Sampling error (percent)	Average vol./acre trees 12 in. and over 1/ (board-feet)
Currently infested	0.05 ± .02	31.0	16.1
Abandoned	0.10 ± .03	26.4	42.5
Total 5-year loss	0.24 ± .04	18.3	99.4

1/ There were 5 trees in the 6 inch - 12 inch class not included in the volume figures.

The table shows that current loss within the 7,000-acre sampled is only 16 board-feet per acre. This amount of mortality is very light and on the basis of these data alone it would be considered endemic. The total five year's loss is also very light on the 7,000 acres sampled.

In September 1957, G.C. Trostle again flew the area and found that additional groups of faded trees could be seen adjacent to the 7,000 acres sampled. One large group of trees was located on the southern end, just beyond the area cruised. Two other infested areas, of approximately a section each, were observed to the north and east, just outside the boundary of the cruised area (see map). Aerial observations indicated that losses in ponderosa pine due to the western pine beetle occurred in the form of scattered groups of faded trees in these three outlying areas. Judging from these observations, the losses just outside the area sampled were considerably higher than those within. Consequently, it is evident that the data in the foregoing table cannot be considered completely representative of conditions over the drainage as a whole.

Discussion

The ground survey of the Jawbone Creek drainage during August 1957 showed that the western pine beetle loss in ponderosa pine was extremely light within

the 7,000-acre area sampled. However, a subsequent aerial survey of the area in September 1957 indicated that several large groups of infested ponderosa pine occurred immediately to the north, south, and east, which were not sampled in the ground survey. Losses on the 7,000 acres sampled were not heavy enough to indicate the need for control. However, losses on the adjacent areas appeared to be considerably higher, and may warrant control through salvage logging, chemicals or fell, peel and burn, or a combination of these methods.

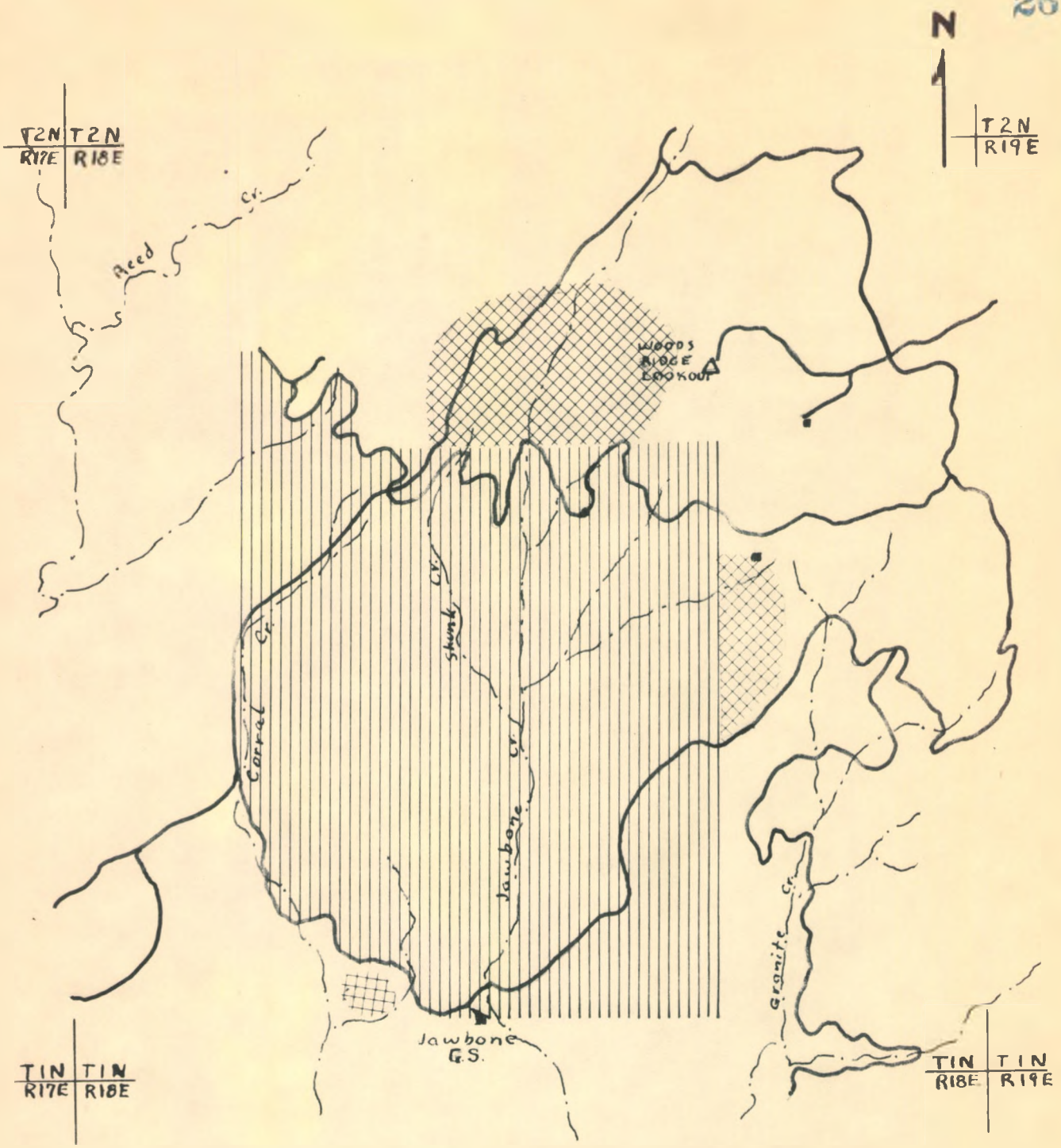
These areas should be reexamined in the spring of 1958 from the air, and further ground surveys made if they are needed.

Berkeley, California
February 14, 1958

Boyd E. Wickman,
Entomologist

Attachment: Map

Agriculture--Forest Service, Berkeley, Calif.



WESTERN PINE BEETLE INFESTATION

Jawbone Creek

STANISLAUS NATIONAL FOREST

1957

1957 . Cruise Area

Infested Area not cruised

T 1 N R.18 E.

SCALE
1" = 1 mile